Notice of Allowability	Application No.	Applicant(s)	
	10/537,764	SEO, JAE-CHIL	
	Examiner	Art Unit	
	Conrad R. Blease	2809	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-4*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 06/06/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Allowable Subject Matter

Patent Application, Seo, Jae-Chil, 2005: Rear Plate for Plasma Display Panel.

1. Claims 1-4 are allowed.

2. The Following is an examiner's statement for the reason of allowance:

3. **Claim 1.** The Prior art neither teaches or suggests all of the elements of Claim 1 in combination and particularity:

A rear plate of a plasma display panel, the rear plate comprising: a glass substrate; electrodes formed in a shape of patterns on an upper surface of the glass substrate; a dielectric layer formed on upper surfaces of the electrode and the upper surface of the glass substrate; barrier walls formed in a shape of a pattern through etching on an upper surface of the dielectric layer; and phosphorous layers formed on side surfaces and bottom surfaces of the barrier walls, wherein: the electrodes has a thickness of 2 to 8 .mu.m and a specific resistance of 1.0.times.10.sup.-6 to 5.0.times.10.sup.-6 .OMEGA.cm; the dielectric layer is made from a first mixture which includes a first filler and at least one glass powder selected from among a first glass powder and a second glass powder, the first glass powder including PbO of 30 to 80 wt %, ZnO of 0 to 20 wt %, SiO.sub.2 of 0 to 20 wt %, B.sub.2O.sub.3 of 5 to 40 wt %, Al.sub.2O.sub.3 of 0 to 12 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 5 wt %, and BaO+CaO+MgO+SrO of 0 to 5 wt %, the second glass powder including Bi.sub.2O.sub.3 of 36 to 84 wt %, B.sub.2O.sub.3 of 5 to 28 wt %, PbO of 0 to 46 wt %, ZnO of 0 to 30 wt %, Al.sub.2O.sub.3 of 0 to 13 wt %, SiO.sub.2 of 0 to 10 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 5 wt %, and BaO+CaO+MgO+SrO of 0 to 3 wt %, each of the first and second glass powders having an average particle diameter of 1 to 10 .mu.m, a softening temperature of 390 to 550.degree. C., and a thermal expansive coefficient of 63.times.10.sup.-7 to 83.times.10.sup.-7/.degree. C., the first filler having an average particle diameter of 0.01 to 10 .mu.m, the dielectric layer having a dielectric constant of 8 to 20, a reflectance of 50 to 80%, an etching rate of 0.01 to 1.0 .mu.m/min with respect to inorganic acid, and a thickness of 10 to 30 .mu.m; the barrier walls are made from a second mixture which includes a second filler, organic material, additives, and at least one glass powder selected from the group consisting of a third, fourth, and fifth glass powders, the third glass powder including ZnO of 0 to 48 wt %, SiO.sub.2 of 0 to 21 wt %, B.sub.2O.sub.3 of 25 to 56 wt %, Al.sub.2O.sub.3 of 0 to 12 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 38 wt %, and BaO+CaO+MgO+SrO of 0 to 15 wt %, the fourth glass powder including PbO of 25 to 65 wt %, ZnO of 0 to 35 wt %, SiO.sub.2 of 0 to 26 wt %, B.sub.2O.sub.3 of 0 to 30 wt %, Al.sub.2O.sub.3+SnO.sub.2 of 0 to 13 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 19 wt %, BaO of 0 to 26 wt %, and CaO+MgO+SrO of 0 to 13 wt %, the fifth glass powder including PbO of 35 to 55 wt %, B.sub.2O.sub.3 of 18 to 25 wt %, ZnO of 0 to 35 wt %, BaO of 0 to 16 wt %, SiO.sub.2+Al.sub.2O.sub.3+SnO.sub.2 of 0 to 9 wt %, CoO+CuO+MnO.sub.2+Fe.sub.2O.sub.3 of 0 to 15 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 19 wt %, and CaO+MgO+SrO of 0 to 13 wt %, the third glass powder having a softening temperature of 460 to 630.degree. C., a thermal expansive coefficient of 64.times.10.sup.-7 to 105.times.10.sup.-7/.degree. C., and an average particle diameter of 0.5 to 17 .mu.m, each of the fourth and fifth glass powders having a softening temperature of 390 to 550.degree. C., a thermal expansive coefficient of 63.times.10.sup.-7 to 110.times.10.sup.-7/.degree. C., and an average particle diameter of 0.5 to 17 .mu.m, the second filler having an average particle diameter of 0.01 to 10 .mu.m, the barrier walls being formed with a height of 100 to 180 .mu.m by attaching a barrier wall layer formed in a shape of green tapes to an upper

surface of the dielectric layer, firing the barrier wall layer together with the dielectric layer at a temperature between 400.degree. C. and 700.degree. C., and then etching the barrier wall layer, the barrier wall layer having a dielectric constant of 5 to 18, a reflectance of 40 to 80%, an etching rate of 1.0 to 50.0 .mu.m/min with respect to inorganic acid; the phosphorous layers have a thickness of 10 to 50 .mu.m; and a difference between the thermal expansive coefficients of the dielectric layer and the barrier wall layer has a percentage between 0 and 10%, and a difference between the softening temperatures of the dielectric layer and the barrier wall layer has a value between 0 and 20.degree. C.

4. **Claim 2.** The Prior art neither teaches or suggests all of the elements of Claim 2 in combination and particularity:

A rear plate of a plasma display panel, the rear plate comprising: a glass substrate; electrodes formed in a shape of patterns on an upper surface of the glass substrate; a dielectric layer formed on upper surfaces of the electrode and the upper surface of the glass substrate; barrier walls formed in a shape of a pattern through etching on an upper surface of the dielectric layer; and phosphorous layers formed on side surfaces and bottom surfaces of the barrier walls, wherein: the electrodes has a thickness of 2 to 8 .mu.m and a specific resistance of 1.0.times.10.sup.-6 to 5.0.times.10.sup.-6 .OMEGA.cm; the dielectric layer is made from a first mixture which includes a first filler, organic material, additives, and at least one glass powder selected from among a first glass powder and a second glass powder, the first glass powder including PbO of 30 to 80 wt %, ZnO of 0 to 20 wt %, SiO.sub.2 of 0 to 20 wt %, B.sub.2O.sub.3 of 5 to 40 wt %, Al.sub.2O.sub.3 of 0 to 12 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 5 wt %, and BaO+CaO+MgO+SrO of 0 to 5 wt %, the second glass powder including Bi.sub.2O.sub.3 of 36 to 84 wt %, B.sub.2O.sub.3 of 5 to 28 wt %, PbO of 0 to 46 wt %, ZnO of 0 to 30 wt %, Al.sub.2O.sub.3 of 0 to 13 wt %, SiO.sub.2 of 0 to 10 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 5 wt %, and BaO+CaO+MgO+SrO of 0 to 3 wt %, each of the first and second glass powders having an average particle diameter of 1 to 10 .mu.m, a softening temperature of 390 to 550.degree. C., and a thermal expansive coefficient of 63.times.10.sup.-7 to 83.times.10.sup.-7/.degree. C., the first filler having an average particle diameter of 0.01 to 10 .mu.m, the dielectric layer having a dielectric constant of 8 to 20, a reflectance of 50 to 80%, an etching rate of 0.01 to 1.0 .mu.m/min with respect to inorganic acid, and a thickness of 10 to 30 .mu.m, the dielectric layer being formed in a shape of a green tape and then attached to upper surfaces of the electrodes; the barrier walls are made from a second mixture which includes a second filler, organic material, additives, and at least one glass powder selected from the group consisting of a third, fourth, and fifth glass powders, the third glass powder including ZnO of 0 to 48 wt %, SiO.sub.2 of 0 to 21 wt %, B.sub.2O.sub.3 of 25 to 56 wt %, Al.sub.2O.sub.3 of 0 to 12 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 38 wt %, and BaO+CaO+MgO+SrO of 0 to 15 wt %, the fourth glass powder including PbO of 25 to 65 wt %, ZnO of 0 to 35 wt %, SiO.sub.2 of 0 to 26 wt %, B.sub.2O.sub.3 of 0 to 30 wt %, Al.sub.2O.sub.3+SnO.sub.2 of 0 to 13 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 19 wt %, BaO of 0 to 26 wt %, and CaO+MgO+SrO of 0 to 13 wt %, the fifth glass powder including PbO of 35 to 55 wt %, B.sub.2O.sub.3 of 18 to 25 wt %, ZnO of 0 to 35 wt %, BaO of 0 to 16 wt %, SiO.sub.2+Al.sub.2O.sub.3+SnO.sub.2 of 0 to 9 wt %, CoO+CuO+MnO.sub.2+Fe.sub.2O.sub.3 of 0 to 15 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 19 wt %, and CaO+MgO+SrO of 0 to 13 wt %, the third glass powder having a softening temperature of 460 to 630.degree. C., a thermal expansive coefficient of 64.times.10.sup.-7 to 105.times.10.sup.-7/.degree. C., and an average particle diameter of 0.5 to 17 .mu.m, each of the fourth and fifth glass powders having a softening temperature of 390 to 550.degree. C., a thermal expansive coefficient of 63.times.10.sup.-7 to 110.times.10.sup.-7/.degree. C., and an average particle diameter of 0.5 to 17 .mu.m, the second filler having an average particle diameter of 0.01 to 10 .mu.m, the barrier walls being formed with a height of 100 to 180 .mu.m by attaching a barrier wall layer formed in a shape of green tapes to an upper surface of the dielectric layer, firing the barrier wall layer together with the dielectric layer at a temperature between 400.degree. C. and 700.degree. C., and then etching the barrier wall layer, the barrier wall layer having a dielectric constant of 5 to 18, a reflectance of 40 to 80%, and an etching rate of 1.0 to 50.0 .mu.m/min with respect to inorganic acid; the phosphorous layers have a thickness of 10 to 50 .mu.m; and a difference between the thermal expansive coefficients of the dielectric layer and the barrier wall layer has a percentage between 0 and 10%, and a difference between the softening temperatures of the dielectric layer and the barrier wall layer has a value between 0 and 20.degree. C.

5. **Claim 3.** The Prior art neither teaches or suggests all of the elements of Claim 3 in combination and particularity:

A rear plate of a plasma display panel, the rear plate comprising: a glass substrate; electrodes formed in a shape of patterns on an upper surface of the glass substrate; a dielectric layer formed on upper surfaces of the electrode and the upper surface of the glass substrate; barrier walls formed in a shape of a pattern through etching on an upper surface of the dielectric layer; and phosphorous layers formed on side surfaces and bottom surfaces of the barrier walls, wherein: the electrodes has a thickness of 2 to 8 .mu.m and a specific resistance of 1.0.times.10.sup.-6 to 5.0.times.10.sup.-6 .OMEGA.cm; the dielectric layer is made from a first mixture which includes a first filler, organic material, additives, and at least one glass powder selected from among a first glass powder and a second glass powder, the first glass powder including PbO of 30 to 80 wt %, ZnO of 0 to 20 wt %, SiO.sub.2 of 0 to 20 wt %, B.sub.2O.sub.3 of 5 to 40 wt %, Al.sub.2O.sub.3 of 0 to 12 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 5 wt %, and BaO+CaO+MgO+SrO of 0 to 5 wt %, the second glass powder including Bi.sub.2O.sub.3 of 36 to 84 wt %, B.sub.2O.sub.3 of 5 to 28 wt %, PbO of 0 to 46 wt %, ZnO of 0 to 30 wt %, Al.sub.2O.sub.3 of 0 to 13 wt %, SiO.sub.2 of 0 to 10 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 5 wt %, and BaO+CaO+MgO+SrO of 0 to 3 wt %, each of the first and second glass powders having an average particle diameter of 1 to 10 .mu.m, a softening temperature of 390 to 550.degree. C., and a thermal expansive coefficient of 63.times.10.sup.-7 to 83.times.10.sup.-7/.degree. C., the first filler having an average particle diameter of 0.01 to 10 .mu.m, the dielectric layer having a dielectric constant of 8 to 20, a reflectance of 50 to 80%, an etching rate of 0.01 to 1.0 .mu.m/min with respect to inorganic acid, and a thickness of 10 to 30 .mu.m, the dielectric layer being formed in a shape of a green tape; the barrier walls are made from a second mixture which includes a second filler, organic material, additives, and at least one glass powder selected from the group consisting of a third, fourth, and fifth glass powders, the third glass powder including ZnO of 0 to 48 wt %, SiO.sub.2 of 0 to 21 wt %, B.sub.2O.sub.3 of 25 to 56 wt %, Al.sub.2O.sub.3 of 0 to 12 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 38 wt %, and BaO+CaO+MgO+SrO of 0 to 15 wt %, the fourth glass powder including PbO of 25 to 65 wt %, ZnO of 0 to 35 wt %, SiO.sub.2 of 0 to 26 wt %, B.sub.2O.sub.3 of 0 to 30 wt %, Al.sub.2O.sub.3+SnO.sub.2 of 0 to 13 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 19 wt %, BaO of 0 to 26 wt %, and CaO+MgO+SrO of 0 to 13 wt %, the fifth glass powder including PbO of 35 to 55 wt %, B.sub.2O.sub.3 of 18 to 25 wt %, ZnO of 0 to 35 wt %, BaO of 0 to 16 wt %, SiO.sub.2+Al.sub.2O.sub.3+SnO.sub.2 of 0 to 9 wt %, CoO+CuO+MnO.sub.2+Fe.sub.2O.sub.3 of 0 to 15 wt %, Na.sub.2O+K.sub.2O+Li.sub.2O of 0 to 19 wt %, and CaO+MgO+SrO of 0 to 13 wt %, the third glass powder having a softening temperature of 460 to 630.degree. C., a thermal expansive coefficient of 64.times.10.sup.-7 to 105.times.10.sup.-7/.degree. C., and an average particle diameter of 0.5 to 17 .mu.m, each of the fourth and fifth glass powders having a softening temperature of 390 to 550.degree. C., a thermal expansive coefficient of 63.times.10.sup.-7 to 110.times.10.sup.-7/.degree. C., and an average particle diameter of 0.5 to 17 .mu.m, the second filler having an average particle diameter of 0.01 to 10 .mu.m; the phosphorous layers have a thickness of 10 to 50 .mu.m; and a difference between the thermal expansive coefficients of the dielectric layer and the barrier wall layer has a percentage between 0 and 10%, and a difference between the softening temperatures of the dielectric layer and the barrier wall layer has a value between 0 and 20.degree. C., wherein a barrier wall layer formed in a shape of green tapes, which has a dielectric constant of 5 to 18, a reflectance of 40 to 80%, and an etching rate of 1.0 to 50.0 .mu.m/min with respect to inorganic acid, is integrated with the dielectric layer to form a lamination of dielectric layer/barrier wall layer, and the lamination of dielectric layer/barrier wall layer is attached to the upper surfaces of the electrodes and the glass substrate, is baked at a temperature between 400.degree. C. and 700.degree. C., and is then etched, so that the barrier walls are formed with a height of 100 to 180 .mu.m.

6. **Claim 4.** As claim 4 depends from one of the allowed claims, claims 1-3, it is also allowed.

7. An assembly of these elements was not found either "as a whole" or in an obvious combination within the prior art. Art within the field can be found in the IDS provided by applicant as well as in other applications filed by the assignee. However, an extensive search of the prior art confirms the patentability of the subject matter presented by applicant. The art of the application is similar to US Patent Application, Cho, 2006, Publication Number 2006/0119265. However, this application was published after the current application, and has no effect on the patentability of applicant's invention. Further, many of the specific compounds used by applicant can be found in prior US patents, as can the use of green tape. However, the prior art reveals nothing that anticipates or renders obvious the specific and detailed claims presented by applicant. (See US Patents: Futoshi Ishizaki et al, 1994, 5300467: Na_2O, K_2O and Li_2O; Ryu et al, 2001, 6271161: PbO; Lapp, 1995, 5459109: BaO, CaO, MgO, SrO; Wang et al, 1999, 5985460: Green Tape)

8. Any comments considered necessary by applicant must be submitted no later then the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Conrad R. Blease whose telephone number is 571-270-1735. The examiner can normally be reached between 10am and 6pm, Mondays through Thursdays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bruce, can be reached Monday through Thursday at 571-272-2487. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Conrad R. Blease

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DAVID BRUCE
SUPERVISORY PATENT EXAMINER